

# Pesticide incidents report

Field Operations Directorate investigations

1 April 2005 - 31 March 2006

## Introduction

1 This report provides information on incidents and complaints involving pesticides investigated by the Field Operations Directorate (FOD) of the Health and Safety Executive (HSE) between 1 April 2005 and 31 March 2006.

2 The report comprises:

- statistical information on complaints and enforcement;
- a report on alleged ill-health incidents reviewed by HSE's Pesticide Incidents Appraisal Panel (PIAP);
- environmental and other complaints not alleging ill health; and
- case studies.

3 FOD's activity on pesticides is not limited to the investigation of incidents and complaints and formal enforcement. HSE staff also provide advice and guidance to members of the public and to employers, the self-employed and employees during site visits and inspections.

4 When investigating pesticide incidents and complaints, inspectors are concerned not only with the health of people at work and members of the public who may be affected by work activities, but also with the effects of pesticides on the environment. The investigation of incidents often requires expertise from the range of disciplines within HSE. Inspectors, specialist inspectors, qualified medical and occupational health professionals and scientists from the Health and Safety Laboratory may all be involved. Inspectors also liaise locally with other bodies that have enforcement responsibilities for pesticide activities, including other government departments such as the Environment Agency (EA), the Department for Environment, Food and Rural Affairs (DEFRA), agencies of DEFRA including the Pesticides Safety Directorate (PSD) and the local authorities (LAs) in Great Britain, to ensure a consistent and co-ordinated approach.

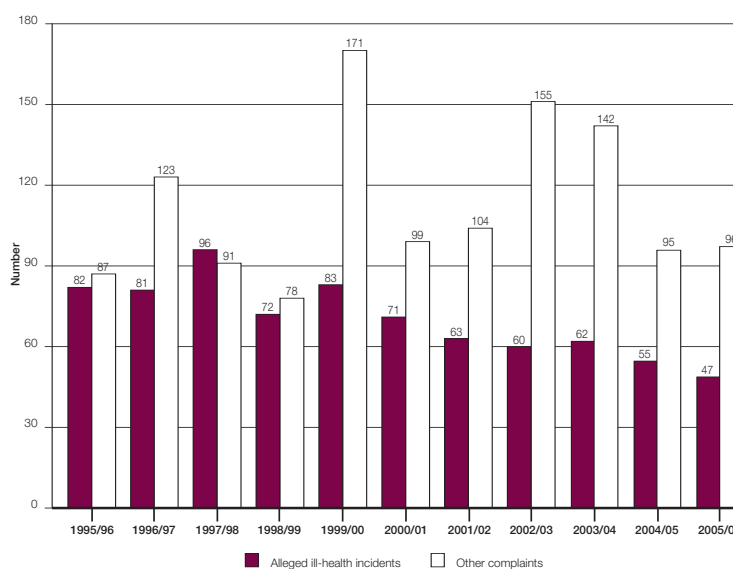
5 This report does not include investigations for which these other bodies are the enforcing authority. Similarly, products such as veterinary medicines (including sheep treatments), which are subject to the Medicines Act 1968, are outside the remit of the report.

6 The report and details of individual incidents will be presented to the Advisory Committee on Pesticides (ACP) to inform the pesticides approvals process.

## Statistical summary

7 During 2005/06, FOD inspectors investigated 143 reported pesticide incidents (complaints). 47 complaints involved allegations of ill health, with the remaining 96 complaints involving other issues to do with pesticide use. The total of 143 incidents is a decrease of seven from the previous year's figure of 150 (2004/05) and 23.5% lower than the average for the previous ten years.

8 Figure 1 shows how the numbers of incidents and complaints compared with previous years.



**Figure 1** FOD Inspectorate alleged ill-health incidents and other complaints 1995/96-2005/06

9 The number of complaints alleging ill health is eight (14.5%) less than in 2004/05 and 25 (35%) lower than the average of the previous ten years. Further analysis of these complaints is in paragraphs 15-43.

10 The number of other complaints is one more than in 2004/05 but 18 (16%) lower than the average of the previous ten years. Further analysis of these complaints is in paragraphs 44-49.

11 Seven Informations (charges) were laid before the Courts during the year, all of which led to convictions. The average fine imposed by the Courts was £971, which compares with an average of £1650 for 2004/05.

12 Inspectors issued 20 enforcement notices under the Food and Environment Protection Act 1985 (as amended) (FEPA) and the Control of Pesticides Regulations 1986 (as amended) (COPR) during the year compared with 41 in 2004/05.

13 These enforcement figures are provisional and may be revised before publication in the Health and Safety Commission's Annual Report 2005/06.

14 Inspectors also enforce matters relating to the use of pesticides under health and safety legislation, principally the Health and Safety at Work etc Act 1974 (the HSW Act) and the Control of Substances Hazardous to Health Regulations 2002 (COSHH). This report, with the exception of one of the case studies, does not include information on any related enforcement under this legislation.

## Alleged ill-health incidents

### The Pesticide Incidents Appraisal Panel

15 HSE's Pesticide Incidents Appraisal Panel (PIAP) considers all incidents reported to FOD where there is any allegation that the use of a pesticide has caused ill health. PIAP is notified of these incidents only on completion of the inspector's investigation.

16 On occasion, PIAP also considers a small number of other incidents, which fall within the jurisdiction of other parts of HSE or of a different enforcing authority, such as a local authority.

17 The data in this report is presented in line with that of previous reports since 1995/96. However, the role of PIAP remains under continuing review within HSE as part of a wider discussion, both within government and by its Advisory Committee on Pesticides (ACP), on pesticide monitoring and surveillance schemes.

18 The PIAP membership for 2005/06 is listed in Appendix 1.

19 The main purpose of PIAP, however, remains 'to provide an overview of alleged ill health attributed to pesticide exposure (as reported to and investigated by HSE) so that new issues and trends can be identified, and to inform the pesticides approval process'.

20 To fulfil this purpose, PIAP considers individual incident and case reports, not to establish the cause, but to consider the strength of the association between exposure and ill health. During the year the panel has, therefore, continued to assess reports based on 'balance of probability' from available information and not, as before 2002, making an assessment 'beyond reasonable doubt'.

21 This shift in the approach to case assessment should lower the threshold for recording cases as being potentially relevant or important. It should also help identify any new associations. While the change might cause some distortion to the comparative year-on-year results presented in the annual report series, it will provide a 'categorisation' of cases more appropriate to PIAP's defined purpose.

22 Appendix 2 outlines the current case/incident classification scheme, which remains largely unchanged from previous years, and Appendix 3 is a flow chart showing how PIAP reviews cases to reach its decision.

## Summary information on alleged ill-health incidents for 2005/06

23 Table 1 shows the outcome for the 47 incidents forwarded to PIAP in 2005/06 (there were no incidents forwarded by local authorities in this year) broken down according to the panel's assessment (using the classification scheme in Appendix 2) and the employment status of the people involved.

	Total		Employees/ Self-employed working with pesticides		Members of public/others	
	Incidents	(People)	Incidents	(People)	Incidents	(People)
Confirmed	1	(3)	1	(3)	0	(0)
Likely	1	(1)	0	(0)	1	(1)
Open assessment (i)	0	(0)	0	(0)	0	(0)
Open assessment (ii)	0	(0)	0	(0)	0	(0)
Unrelated	6	(7)	0	(0)	6	(7)
Insufficient information	26	(37)	0	(0)	26	(37)
Pending	12	(19)	0	(0)	12	(19)
Not an incident	1	(14)	0	(0)	1	(14)
<b>Total</b>	<b>47</b>	<b>(81)</b>	<b>1</b>	<b>(3)</b>	<b>46</b>	<b>(78)</b>

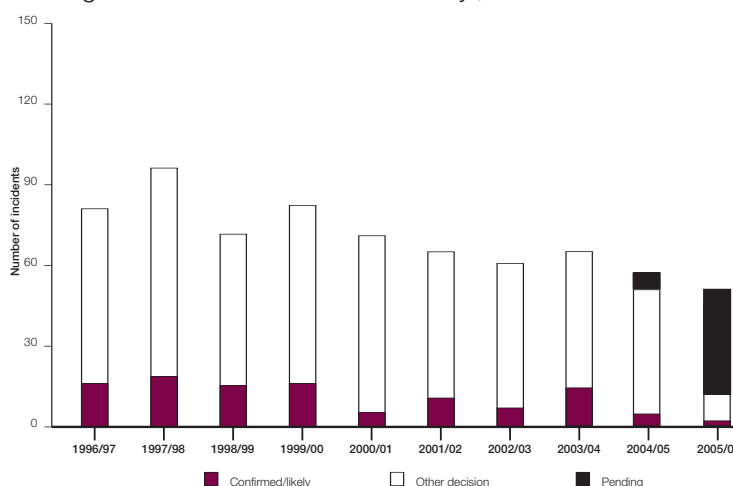
**Table 1** Number of alleged ill-health incidents and people affected analysed by PIAP decision and employment status 2005/06

24 In this and subsequent analyses, incidents in which more than one individual was alleged to have been made ill and for which the individuals received a different assessment by the panel, have been classified according to the most serious individual assessment. The ranking of severity is taken as being 'confirmed', 'likely', 'open assessment', and 'insufficient information'.

25 Ten of the incidents identified as 'pending' in last year's report have now been considered by the panel; the remaining four will be considered during the next year. 12 incidents from the current year (2005/06) remain pending, while further medical or exposure information is sought.

## Overall trends

26 Figure 2 shows the number of incidents forwarded to PIAP in each of the last ten years, analysed according to whether the panel classified the link between pesticide usage and the alleged ill health as 'confirmed' or 'likely', or came to some other decision.



**Figure 2** Trends in PIAP decisions

27 At 47 the total number of alleged ill-health incidents in 2005/06 was the lowest figure yet recorded. Although there was a slight increase over the number of cases reported in 2003/04 the previously noted trend of a falling number of cases reported annually since 1999/2000 would appear to continue.

28 The proportion of the total (excluding 'pending') incidents assessed as 'confirmed' or 'likely', has been in the order of 20% to 25% since 1995/96 except in 2000/01 when it was 10%. In 2002/03 the figure was 13%, while for 2003/04, taking into account the pending cases, the final figure was 29% (18 of 62). In the current year, although decisions on 12 cases are still 'pending', the figure has fallen back to 6% (2 of 35).

29 The suggestion that the proportion of incidents assessed as 'confirmed' or 'likely' might be increasing, a finding that had been predicted from the change in approach to the assessment of incidents outlined in paragraphs 20 and 21, is not therefore confirmed. The proportion continues to remain considerably lower than in the early 1990s, when nearly half of the cases considered by the panel were assessed as 'confirmed' or 'likely'.

30 The number of people involved in reported incidents considered by the panel in each of the last ten years, either people using pesticides as part of a work activity or members of the public, is shown in Figure 3 (excluding a small number of cases where employment status was not recorded).

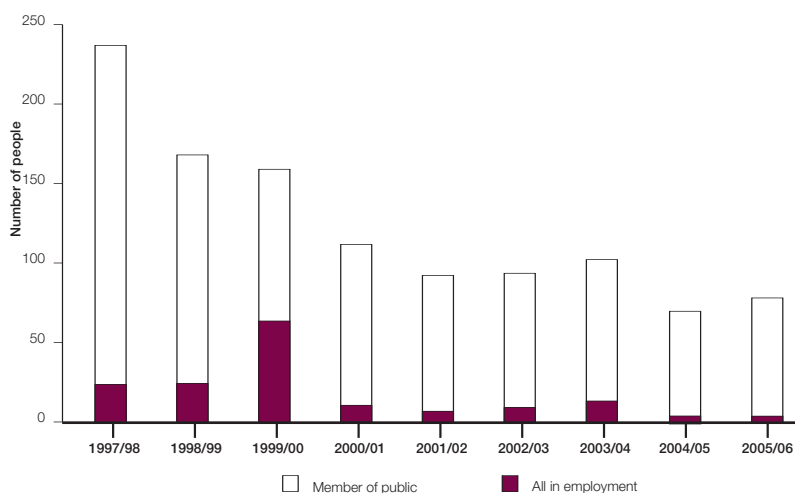


Figure 3 Trends in employment status: all alleged ill-health incidents

31 Figure 3 shows that the majority of people involved in reported incidents each year continue to be members of the public. The proportion in employment has fluctuated over the past ten years although for the past five years it has remained less than 15%. The total number of people involved in alleged ill-health incidents has also fluctuated greatly from one year to the next. Much of this fluctuation reflects the occurrence of single incidents involving large numbers of people. By contrast, the number of incidents reported each year has not been so variable, as Figure 2 shows.

### Recent ill-health data

32 Since 1994/95, the panel has recorded the type and severity of the ill health experienced by people involved in incidents with a 'confirmed' or 'likely' assessment. In 2002/03 this was extended to include cases receiving an open

assessment. Symptoms are recorded as 'acute' and/or 'chronic', 'local' and/or 'systemic' and their severity as 'mild' (requiring no or self-treatment), 'moderate' (presenting to a GP or hospital Accident and Emergency Department) or 'severe' (in-patient treatment).

33 There were no cases investigated by FOD inspectors during the current year where complaints of chronic ill health were recorded.

34 Table 2 summarises the information on severity of symptoms for the current year 2005/06. It incorporates the assessments of all incidents (2) and associated individuals (4) with a 'confirmed', 'likely', or 'open' assessment.

	Mild		Moderate		Severe	
	Incidents	(People)	Incidents	(People)	Incidents	(People)
Confirmed	0	(0)	1	(3)	0	(0)
Likely	1	(1)	0	(0)	0	(0)
Open assessment (i)	0	(0)	0	(0)	0	(0)
Open assessment (ii)	0	(0)	0	(0)	0	(0)
<b>Total</b>	<b>1</b>	<b>(1)</b>	<b>1</b>	<b>(3)</b>	<b>0</b>	<b>(0)</b>

**Table 2** Severity of ill health

35 Three people were assessed as having 'moderate' symptoms which were classified as being 'systemic' while one person was assessed as having 'mild local' symptoms.

36 Mild local symptoms are most commonly a self-limiting skin rash or an irritation of the skin, eyes or respiratory tract, while mild systemic symptoms include transient headaches and nausea.

37 During 2005/06 the panel has instituted a review of those incidents assessed as 'confirmed' or 'likely' where irritancy has been the lead health effect. The objective of this work is to gain an insight into the pattern of irritant responses reported and the circumstances and patterns of exposure.

## **Recent and historical data on pesticides**

38 For each of the pesticides reported to be involved in an incident, the database records the trade names and the names of the active ingredients where these have been identified. In addition to an assessment of cases against the known toxicology of active ingredients the panel has, since April 2001, included a consideration of the hazards associated with co-formulants.

39 For many incidents, however, information relating to product identification is not available and this contributes to the high proportion of cases categorised as 'insufficient information'. During 2005/06, products could not be identified for 10 of the 47 reported incidents (21%).

40 The full interpretation of the overall PIAP database is not only limited by the lack of product information, but also by the fact that the relative importance of particular categories of pesticide may simply reflect the fact that their usage is more widespread rather than indicating that they are more hazardous. Also, mention of an active ingredient in the report of an incident need not imply that it contributed to any ill-health effect: many pesticides include more than one active ingredient, as well as non-active components, and it may be that one of these was responsible.

41 Accepting these limitations, the most common pesticide function associated with incidents reported to PIAP is herbicide, followed by fungicide and insecticide. In 2005/06, of the 57 identified products involved in the reported incidents there were 21 herbicides, eight fungicides, eight insecticides, and 20 'other' groupings.

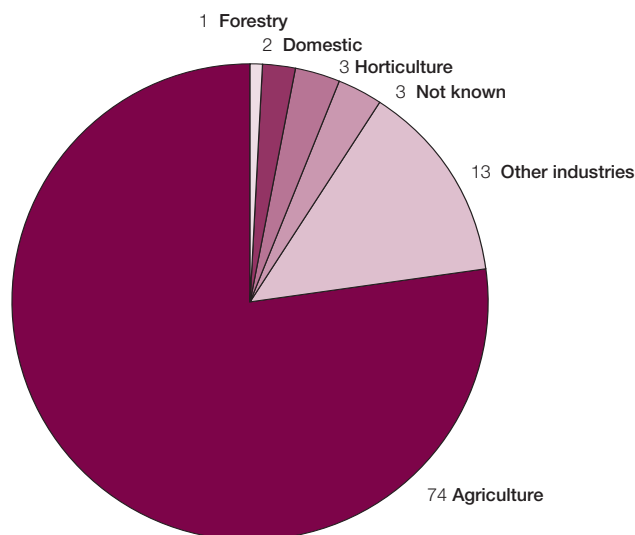
42 The most commonly recorded active ingredient during 2005/06 was glyphosate (7) with no other actives having a greater involvement.

43 Finally, a point of observation – the Medical Panel met only once in 2005/06, a consequence of the steady fall in numbers of reported cases with a possible health outcome. This meeting took place on 11 April 2006.

## Environmental and other non-health complaints 2005/06

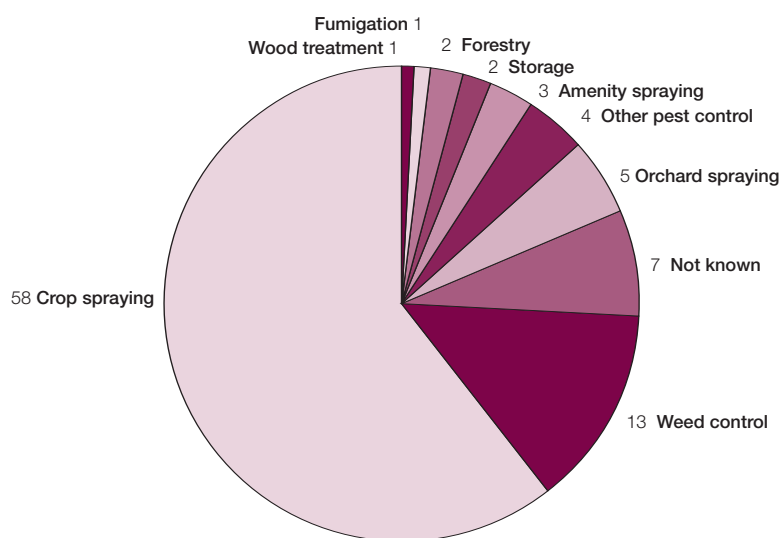
44 During the year there were 96 environmental and other complaints, ie complaints in which there were no allegations of ill health relating to exposure. This is an increase of one from the previous years figure of 95 (2004/05) and compares with an average of 114 and a range of 78 to 171 in the previous ten years (1995/96-2004/05). See Figure 1 and paragraphs 7-10 for statistical analysis of the figures.

45 Figures 4 to 6 summarise the number of complaints in 2005/06, classified according to the industry sector in which the pesticides were used, the work activity involved and the method of application.



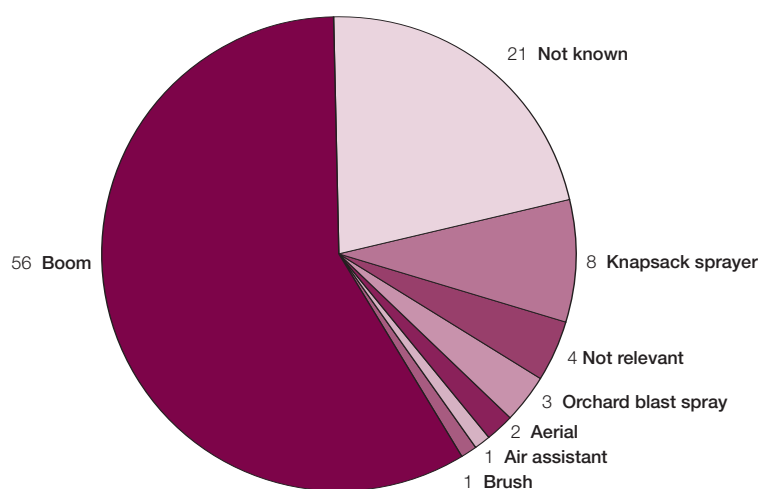
**Figure 4** Number of environmental and other non-health complaints 2005/06: classified by sector

46 Of the 96 complaints, 77% originated from within the agricultural sector. 'Other industries', including the amenity sector, pest control and wood treatment accounted for a further 14% of complaints, 3% horticulture, and the remaining 6% domestic, forestry and 'not known'.



**Figure 5** Number of environmental and other non-health complaints 2005/06: classified by activity

47 Crop spraying accounted for 61% of all environmental and other non-health complaints investigated during 2005/06. Other significant activities included weed control (14%), orchard spraying (5%), amenity spraying (3%), and storage and forestry (2% each). The remaining 13% occurred within a group of miscellaneous activities, including fumigation, wood treatment, other pest control, and 'not known'.



**Figure 6** Number of environmental and other non-health complaints 2005/06: classified by application method

48 Conventional crop boom sprayers were involved in approximately 59% of all environmental and other non-health complaints. Knapsack spraying accounted for 8%, orchard blast spraying a further 3%, and 1% of incidents involved an air-assisted sprayer. A further 2% involved aerial application, another 1% with a brush and in the remaining 26% of complaints the application method was either not recorded or not relevant, eg where the concern related to storage, security, record keeping etc.

49 Of the 96 complaints, 93 were reported by members of the public, consistent with experience in previous years, and three were made by employees.

## Case studies

As in previous years case studies are included in the report to illustrate key issues and areas of concern that commonly give rise to complaints to FOD and/or result in enforcement action.

### Safe use of gassing compounds

All moisture-activated gassing compounds approved for vertebrate pest control are classified as very toxic chemicals. Users who fail to appreciate and understand the true hazards associated with these compounds place themselves and others at serious risk.

#### Case 1

An animal sanctuary and two of its managers were prosecuted following an incident that resulted in three employees receiving hospital treatment for phosphine poisoning. The two managers had placed Phostoxin tablets in holes in the floor of a barn to deal with a rat infestation before the building was restocked with hay. They added water to accelerate the production of gas. The managers had removed a padlock on the poisons storage cabinet with a set of bolt cutters to gain access to the tablets as they did not hold the key. The following day three employees felt unwell after unloading and stacking the fresh hay inside the barn and were taken to hospital where one was kept overnight for treatment. All three experienced prolonged breathing difficulties and were unable to work for several weeks.

Investigation of the incident revealed that the two managers had not been trained to use gassing compounds, they had failed to follow the conditions of approval and, in particular, they had failed to give warning to other workers to keep out of the barn until it had been declared safe for re-entry.

The company was prosecuted under sections 2(1) and 3(1) of the Health and Safety at Work etc Act 1974 (the HSW Act) for failing to ensure the health and safety of its employees and others and the two managers were prosecuted under both the HSW Act and COPR. The company pleaded guilty and was fined £26 000 and ordered to pay £19 500 towards the cost of bringing the prosecution. The two workers also pleaded guilty and were each fined £2050 and required to pay £860 towards the prosecution costs.

**A moisture-activated gassing compound must only be used in the open air for the pest control activities specified on the container label. A risk assessment must always be carried out prior to use to decide what precautions are necessary in the particular circumstances. The assessment should start by considering alternative, potentially safer methods of control. The assessment should also cover how to deal with an emergency eg communications, first-aid and equipment and where necessary (eg in urban areas) what steps to take to exclude the public and non-target animals from the risk area for the duration of the treatment.**

Further advice is contained in the HSE Agriculture Information Sheet No 22 *Gassing of rabbits and vertebrate pests*.

**Gassing activities must only be carried out by competent operators who know the risks associated with the compounds and the precautions to follow. Advice on suitable training courses can be obtained from the British Pest Control Association ([www.bpca.org.uk](http://www.bpca.org.uk)), NPTC ([www.nptc.org.uk](http://www.nptc.org.uk)) and local agricultural colleges.**

## Secure storage and labelling of pesticides

The second case mirrors an incident described in last year's report that had exactly the same tragic consequences. The lessons are well worth repeating.

### Case 2

An employee removed some Dextrone X, a paraquat-based herbicide, from a secure store at a council depot where he worked as a yardman. He had received training in the safe storage and handling of pesticides and held a certificate of competence. Without authorisation, he decanted the herbicide which he intended to use on his own garden into three drinks bottles and carried them home in a plastic carrier bag. On the way he stopped at his local social club for a drink. At the end of the evening he left the premises but forgot the bag. Another member of the club mistook the plastic carrier bag for his own and took it home with him. In the morning, he awoke feeling thirsty and took a small drink from one of the bottles in the belief that it contained soft drink. He died from organ failure three days later in hospital.

The storekeeper was prosecuted under COPR for failing to take all reasonable precautions to protect people's health following the unauthorised removal of a pesticide from a secure store without the knowledge of his employer. He pleaded guilty to the charge and was fined £4000.

**Under Schedule 2 of COPR 'Conditions relating to consent to the sale, supply and storage of pesticides', any person who sells, supplies or stores a pesticide shall take all reasonable precautions, particularly with regard to storage and transport, to protect the health of human beings, creatures and plants, safeguard the environment and in particular avoid pollution of water.**

**Pesticides should never be decanted into drinks bottles or similar receptacles but should always be kept in their original containers. The original labelling should be maintained in a legible condition. Pesticides should never be kept in domestic fridges or cupboards where they can be mistaken for drinks.**

**This advice is confirmed in section 4.3 of the new Code of Practice for using plant protection products which says, 'Never use an empty food or drinks container to hold pesticide'.**

**When pesticides are in transit, they should either be secured in a vehicle or kept under close supervision at all times to prevent any unauthorised interference.**

## Appendix 1: Members of PIAP 2005/06

During 2005/06 members of the panel were:

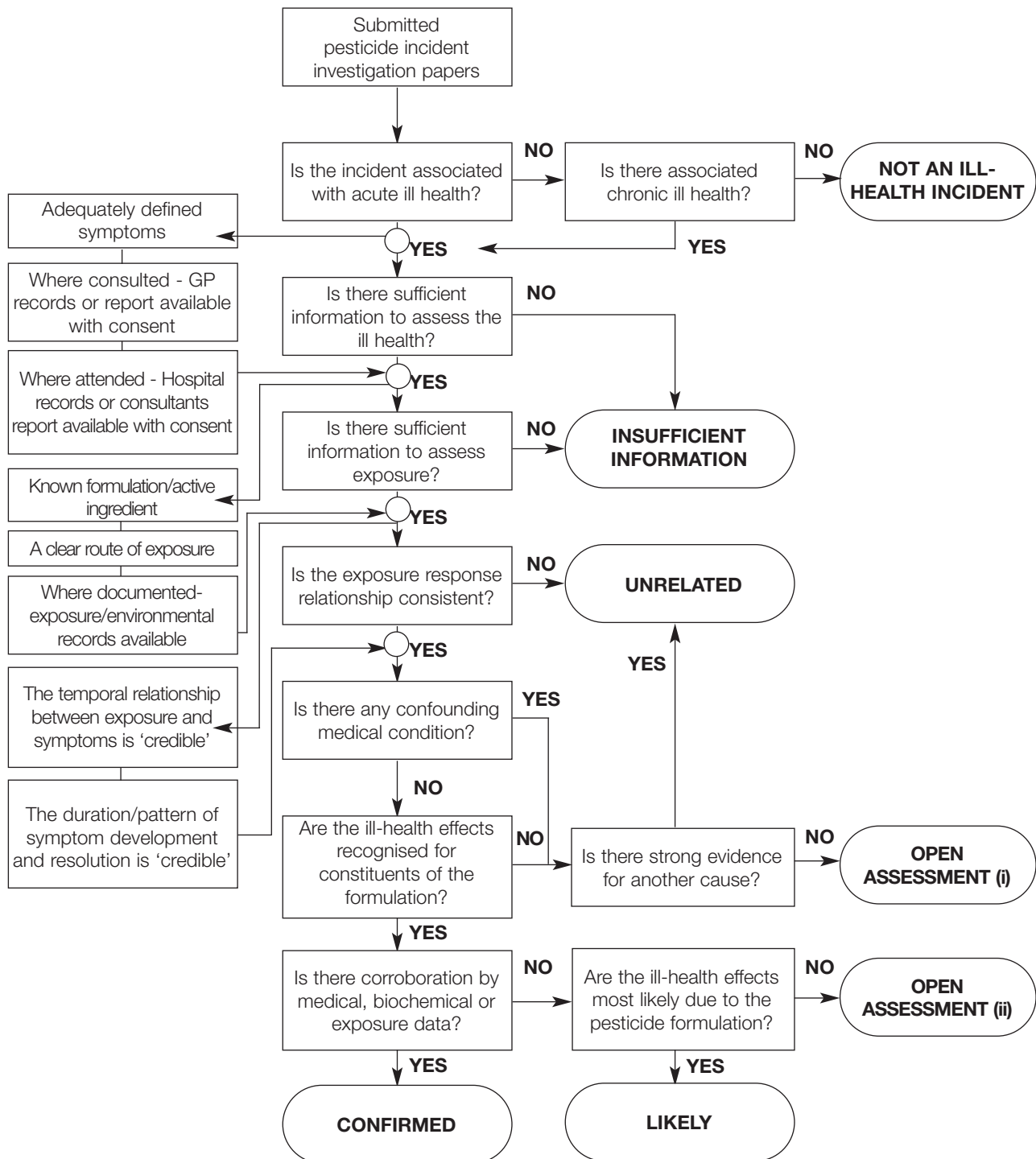
Dr R Rawbone (Chairman)	HSE Corporate Science and Analytical Services Directorate
Dr A Scott	HSE Employment Medical Advisory Service
Mr R Hadway	HSE Policy Group
Dr J Battershill	Department of Health
Miss F Northall	National Poisons Information Service
Miss G Cullen	National Poisons Information Service
Dr A Robertson	Institute of Occupational Medicine
Dr R Ferner	West Midlands Centre for Adverse Drug Reaction Reporting
Dr T C Aw	University of Kent
Dr S Bradberry	National Poisons Information Service

The secretary was from HSE's Corporate Science and Analytical Services Directorate.

## Appendix 2: Pesticide Incidents Appraisal Panel classification scheme

<b>Confirmed</b>	<p>There are clinical symptoms and signs typical of exposure to the cited pesticide formulation combined with either:</p> <ul style="list-style-type: none"><li>■ corroborating medical and (where appropriate) biochemical evidence; or</li><li>■ evidence of overexposure.</li></ul>
<b>Likely</b>	<p>The balance of evidence based on reported exposure circumstances, clinical symptoms and signs or biochemical evidence (where appropriate) is consistent with ill health due to exposure to the cited pesticide formulation.</p>
<b>Open assessment</b>	<p>(i) The reported ill health is not consistent with the known potential ill-health effects of the cited pesticide formulation given the reported exposure circumstances but the implied association cannot be entirely discounted in the light of current knowledge; or</p> <p>(ii) the evidence is consistent with pesticide exposure being the cause of the reported ill health but alternative explanations, eg pre-existing disease are also present.</p>
<b>Unrelated</b>	<p>There is strong evidence, eg evidence about exposure or from medical reports, that the reported ill health is not pesticide-related.</p>
<b>Insufficient information</b>	<p>The available data is insufficient, incomplete or conflicting and the panel is unable to classify a case for one or more of these reasons.</p>

## Appendix 3: Flow chart for PIAP assessments



## Further reading

- 1 *LERAP: Horizontal boom sprayers - A step-by-step guide to reducing aquatic buffer zones in the arable sector* PB5621 Pesticides Safety Directorate 2001, available from DEFRA Publications, ADMAIL 6000, London SW1A 2XX Tel: 08459 556000
- 2 *LERAP: Broadcast air-assisted sprayers* PB6533 Pesticides Safety Directorate 2002, available from DEFRA Publications, ADMAIL 6000, London SW1A 2XX Tel: 08459 556000
- 3 *The Control of Pesticides Regulations 1986* SI 1986/1510 ISBN 0 11 067510 X The Stationery Office 1986, available from The Publications Centre Tel: 0870 600 5522
- 4 *The Control of Pesticides (Amendment) Regulations 1997* SI 1997/188 ISBN 0 11 063695 3 The Stationery Office 1997, available from The Publications Centre Tel: 0870 600 5522
- 5 *Code of Practice for using plant protection products* PB11090 DEFRA and HSE, available from DEFRA Publications, ADMAIL 6000, London SW1A 2XX Tel: 08459 556000. This publication is also available on the Defra website.
- 6 *Code of best practice - Safe use of sulphuric acid as an agricultural desiccant* available from the National Association of Agricultural Contractors (NAAC), Samuelson House, Paxton Road, Orton Centre, Peterborough PE2 5LT Tel: 01733 362920
- 7 *Guidance on storing pesticides for farmers and other professional users* Agriculture Information Sheet AIS16 HSE Books 1996 (free)
- 8 *Reporting incidents of exposure to pesticides and veterinary medicines: What to do if you think people, animals or the environment have been harmed by exposure to pesticides or veterinary medicines* Leaflet INDG141(rev1) HSE Books 1999 (single copy free) Web version: [www.hse.gov.uk/pubns/indg141.pdf](http://www.hse.gov.uk/pubns/indg141.pdf)

## Further information

Information on approved pesticide products is available online at [www.pesticides.gov.uk](http://www.pesticides.gov.uk) (agricultural pesticides) and [www.hse.gov.uk](http://www.hse.gov.uk) (non-agricultural pesticides). The sites are continually updated so that the most up-to-date information is freely available.

Enquiries concerning this report should be addressed to:  
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City Gate West, Toll House Hill, Nottingham NG1 5AT.

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